

**U. S. DEPARTMENT OF ENERGY  
WORK BREAKDOWN STRUCTURE DICTIONARY  
PART II - ELEMENT DEFINITION**

<b>1. PROJECT TITLE/PARTICIPANT</b> Environmental Management/Paducah Remediation Services, LLC (PRS)		<b>2. DATE</b> 11/02/07	<b>3. IDENTIFICATION SITE</b> Paducah Project DOE Portsmouth/Paducah Project Office (PPPO)
<b>4. WBS ELEMENT CODE</b> 04.11.06.01		<b>5. WBS ELEMENT TITLE</b> Soils Operable Unit	
<b>6. INDEX LINE NO.</b> N/A	<b>7. REVISION NO. AND AUTHORIZATION</b> Rev. 2		<b>8. DATE</b> 5/19/08
<b>9. APPROVED CHANGES</b> N/A			
<b>10. SYSTEM DESIGN DESCRIPTION</b> N/A		<b>11. BUDGET AND REPORTING NUMBER</b> N/A	
<b>12. ELEMENT TASK DESCRIPTION</b>  <div style="border: 1px solid black; padding: 5px;"> <p><b><u>WBS STRUCTURE</u></b></p> <p>The scope of this element includes the following sub-elements:</p> <ul style="list-style-type: none"> <li>• WBS 04.11.06.01.01 Soils Subproject Management</li> <li>• WBS 04.11.06.01.02 Soils Removal Action</li> <li>• WBS 04.11.06.01.03 Soils Remedial Action</li> <li>• WBS 04.11.06.01.05 Soil/Rubble Piles</li> <li>• WBS 04.11.06.01.06 Sitewide Walkover</li> </ul> <p><b><u>INTRODUCTION</u></b></p> <p><b><u>Soils Operable Unit Removal Activities:</u></b></p> <p>The objective of this Soils Operable Unit (SOU) subproject is to plan and conduct the facility and equipment demolition and removal for the C-218 Firing Range, the C-403 Neutralization Pit, and the C-410-B Sludge Lagoon. These activities will be conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. The three facilities will be demolished to the slab, if applicable, or to at grade components. Sub-grade areas, including but not limited to, basements, depressions, and sumps will have the walls removed and be backfilled and seeded as applicable with material suitable to prevent surface water accumulation and erosion. A civil survey will be performed at the four corners of the C-403 and C-410-B areas to aid with the potential need to locate these areas in the future. Finally, waste material generated associated with the demolition of these facilities will be dispositioned at an appropriate receiving facility.</p> <p>The scope of this project, in general, is as follows:</p> <ul style="list-style-type: none"> <li>• Preparation and assistance in obtaining regulatory approval for the C-218 Firing Range, the C-403 Neutralizer Pit, and the C-410-B Sludge Lagoon Engineering Evaluation/Cost Analysis (EE/CA), Action Memorandum, and Removal Action Work Plan(s).</li> <li>• Disposition all material associated with the removal action.</li> <li>• Submit final Removal Action Completion Report.</li> </ul> <p><b><u>SOU Remedial Activities:</u></b></p> <p>In addition to the SOU Removal Action for the three inactive facilities, a SOU Remedial Investigation will be conducted. The scope of the Remedial Investigation includes these: 1) SOU SWMU Investigation, 2) polychlorinated biphenyl (PCB) Evaluation, and 3) Limited Area Radiological Investigation of soils.</p> </div>			

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**SWMU Investigation:**

The SOU solid waste management units (SWMUs) listed in the Site Management Plan (SMP), with exceptions noted in this WBS dictionary, will be investigated for a potential remedial action. In general, the soil boundary is considered as the ground surface to 10 ft below ground surface (bgs) and 16 ft bgs in the vicinity of several pipe lines that have invert elevations that deep. Assessments will be addressed through a Remedial Investigation/Feasibility Study (RI/FS) Work Plan.

It should be noted that SWMU 92 and SWMU 97 currently identified in the SMP will not be included within the scope of this investigation, since they currently are covered under the scope of the Surface Water Operable Unit (SWOU) Investigation. In addition, only the portion of SWMU 194 not investigated previously for the depleted uranium hexafluoride (DUF<sub>6</sub>) facility siting study is included within the scope of the SWOU investigation.

**PCB Evaluation:**

The PCB-contaminated soils evaluation will focus on known sources of PCB contamination (e.g., transformers and drainages from switchyards) that have not already been targeted as part of previous investigations. The evaluation will include the sampling and analysis of PCB to a depth of 1 f t. There are approximately 85 identified transformers on site and approximately 6,000 linear ft of ditches that capture runoff from switchyards. It should be noted that the ditches on the north, south, and east sides of C-531-2 switchyard were evaluated as part of the SWOU (On-Site) assessment and are not included in the sitewide PCB evaluation.

**Limited Area Radiological Evaluation:**

The limited area radiological evaluation will consist of a radiological walk over utilizing radiological field instruments capable of detecting radiological contamination to a depth of 1 ft. The evaluation assumes 200 acres of plant area (inside the fence) and will take place in two phases. Phase I includes radiological walkover surveys using a sodium iodide (Na-I) detector and Global Positioning System (GPS) unit to identify hot spots. Phase II includes fixed point In Site Object Counting System (ISOCs) measurements based on Phase I data. Phase II will involve segmenting the 200 acres into 5,000 m<sup>2</sup> survey units each (MARSSIM Class 2). There are 162 survey units within the 200 acres. The area defined under this scope includes grassy or dirt areas that do not have roads, gravel pads, or buildings.

**Soil and Rubble Piles:**

The scope of this project, in general, is as follows:

- Draft, issue, and obtain approval of Sampling and Analysis Plans (SAPs) and associated Addenda for all soil and rubble piles.
- Implement field activities associated with the SAP and Addenda, including collection of samples, sample analyses, data verification/validation/assessment, and risk assessment.
- Draft, issue, and obtain approval of Site Evaluation Reports.
- Draft, issue, and obtain approval of Non-Time Critical Removal Notification/EE/CA.Action Memorandum/RAWP, and Removal Action Completion Report.
- Implement Removal Actions.
- Draft, issue, and obtain DOE approval for a Site-wide Walk-Over [US Department of Energy (DOE) property outside the fenced area], implement the plan, followed by a SAP,implementation and SER.
- Draft, issue, and obtain DOE approval and implement a authorized limits 10 *CFR* 835 posting

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exemption/waiver.												
The Soil/Rubble Pile Site Evaluations and Removal Actions will be developed and implemented for the following SWMUs/Areas of Concern (AOCs).												
<table><tr><th>SWMU No.</th><th>Description</th></tr><tr><td>541</td><td>Soil Pile Area adjacent to Outfall 011 ditch</td></tr><tr><td>492</td><td>Soil Pile Area near Outfall 011 and LBC confluence</td></tr><tr><td>TBD</td><td>93 Soil Piles Areas</td></tr><tr><td>TBD</td><td>29 Rubble Pile Areas</td></tr></table>			SWMU No.	Description	541	Soil Pile Area adjacent to Outfall 011 ditch	492	Soil Pile Area near Outfall 011 and LBC confluence	TBD	93 Soil Piles Areas	TBD	29 Rubble Pile Areas
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<b><u>LOGIC RELATIONSHIPS</u></b>												
<b>Interfaces:</b>												
<u>Internal to PRS:</u>												
<ul style="list-style-type: none"><li>• All PRS project managers and staff</li><li>• All subcontractors</li></ul>												
<u>External to PRS:</u>												
<ul style="list-style-type: none"><li>• DOE Portsmouth/Paducah Project Office (PPPO) and support contractors</li><li>• DOE Headquarters or other DOE sites (if applicable)</li><li>• U.S. Environmental Protection Agency (EPA)</li><li>• Commonwealth of Kentucky (KY)</li><li>• Site tenants including United States Enrichment Corporation (USEC); Uranium Disposition Services, LLC; and Swift Staley Team (SST)</li><li>• USEC services in the area of property, information technology, radios, etc.</li><li>• SST, particularly in the areas of property management, information technology, and security</li><li>• Nevada Test Site (NTS): Profiling and disposition of newly generated and classified and fissile low-level waste (LLW), if required or applicable</li><li>• Energy Solutions: Profiling, treatment, and disposition of mixed and LLW, if required or applicable.</li><li>• TSCA Incinerator, if required or applicable</li><li>• Commercial treatment, storage, or disposal (TSD) Facility: For treatment and disposal of non-radioactive hazardous waste, if required or applicable</li><li>• Stakeholders</li><li>• Citizens Advisory Board and supporting contractor Edward Holmes, Inc.</li><li>• DOE Integrated Safety Management System (ISMS) Verification Team</li><li>• Other non-regulatory key interfaces</li></ul>												
<b>Time Sequencing with Other Work</b>												
<ul style="list-style-type: none"><li>• If necessary a Remedial Investigation Report for the out-years will be prepared or a remedial action for the out-years will be planned and executed.</li><li>• Scrap Metal Project will be complete before work begins on SWMUs associated with the Remedial Investigation.</li><li>• DOE Material Storage Area (DMSA) will be cleared before work begins in the SWMUs that are specified as DMSAs in the Introduction.</li></ul>												

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- Environmental Monitoring surveillance and maintenance (S&M) will continue up too and after the remediation/removal of the SWMUs.

**SCOPE DESCRIPTION**

**WBS 04.11.06.01.01 Soils Subproject Management**

Provide overall management activities associated with this subproject. Activities performed under this sub-element include the following:

- Perform technical, contractual, and project functions necessary to effectively manage and report scope, schedule, and budget.
- Maintain all activities within the defined safety, environmental, and quality requirements.
- Perform technical and personnel management functions.
- Maintain technically qualified and properly trained personnel.
- Develop, evaluate, and report project performance metrics.
- Interface with DOE, KY, EPA, other prime contractors, and stakeholders, as needed.

The method(s) used for determining earned value for this WBS element is Level of Effort.

**WBS 04.11.06.01.02 Soils Removal Actions**

CERCLA Documentation

CERCLA/Federal Facility Agreement (FFA) documents pertaining to the remediation of the SOU at the Paducah Gaseous Diffusion Plant (PGDP) will be prepared under this WBS sub-element. The documents to be completed and associated WBS sub-elements follow.

Removal Notification and EE/CA

A draft D0 Removal Notification and EE/CA will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 Removal Notification and EE/CA will be submitted to the regulators for review and comment. A final D2 Removal Notification and EE/CA will be developed and submitted to the regulators for approval.

Action Memorandum

The draft D0 Action Memorandum will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated, and a final draft D1 Action Memorandum will be submitted to the regulators for review and comment. A final D2 Action Memorandum will be developed and submitted to the regulators for approval.

Removal Action Work Plan

A draft D0 Removal Action/Design Work Plan will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 Removal Action/Design Work Plan will be submitted to the regulators for review and comment. A final D2 Removal Action/Work Plan will be developed and submitted to the regulators for approval.

Removal Action Completion Report

Following completion of fieldwork, a draft D0 Removal Action Completion Report will be prepared and submitted for review and comment. Comments will be incorporated and a draft Removal Action Completion Report will be submitted to DOE for review and approval. A final D2 Removal Action Completion will be submitted.

Soils Removal Action of Three Facilities

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<p>Execute the soils removal action for the C-218 Firing Range, the C-403 Neutralization Pit, and the C-410-B Sludge Lagoon as defined in the Removal Action/Design Work Plan. Completion of the removal action will be documented with a Removal Action Completion Report.</p> <p>The waste disposition scope includes the disposal of waste material generated as part of the removal actions. All waste material will be transported and disposed of at an appropriate receiving facility. The following summarizes the disposition for each facility:</p> <ul style="list-style-type: none"><li>• <u>C-218 Firing Range</u> –Due to the levels of lead associated with the firing range, the waste volume of 120,000 ft<sup>3</sup> will require treatment and disposition at an off-site treatment/disposal facility.</li><li>• <u>C-403 Neutralization Pit</u> – Estimated waste volume of 36,981 ft<sup>3</sup> to be disposed of at an off-site disposal facility. In addition there is an estimated 83,000 gallons of contaminated water that will require treatment and/or off-site disposal. This 83,000 gallons of contaminated water consists of 75,000 gallons of pit water, 4,000 gallons of rinsate water, and 4,000 gallons of decon water. The historical data available indicates that the C-403 neutralization pit is F- and U-listed waste. This hazard classification will result in 100% off-site disposal.</li><li>• <u>C-410-B Sludge Lagoon</u> – Estimated waste volume of 8,512 ft<sup>3</sup> to be disposed of at an off-site disposal facility. In addition there is an estimated 25,000 gallons of contaminated water that will require treatment and/or off-site disposal. This 25,000 gallons of contaminated water consists of 21,000 gallons of lagoon water and 4,000 gallons of decon water. The historical data available indicates that the C-410 lagoon contains radionuclides above the landfill waste acceptance criteria (WAC) and that the waste generated from the removal action will require off-site disposal.</li></ul> <p>The method(s) used for determining earned value for this WBS element is Percent Complete.</p> <p>Before beginning fieldwork, the project team must have an internal field review (IFR). For this IFR, the project team will put together a work package. This work package includes the following:</p> <ul style="list-style-type: none"><li>• Work instructions – includes hold points</li><li>• Training matrix and evidence of training</li><li>• UCD/USQD</li><li>• Lessons Learned</li><li>• Work authorization and work release from facility managers</li><li>• Procedures</li><li>• AHA</li><li>• Excavation/Penetration Permits</li><li>• RWP</li><li>• Team Meeting documentation</li><li>• Project Organizational Chart</li></ul> <p>In addition to the above, a Sampling Analysis Plan (SAP), Quality Assurance Plan (QAP), Waste Management Plan (WMP), and Health and Safety Plan (H&amp;S) may be needed for any non-CERCLA actions.</p> <p>For CERCLA actions, the appropriate FFA/CERCLA documentation will be required which will include SAP, QAP, WMP, H&amp;S Plan, and other documents, as applicable to the action. These documents may require regulatory approval.</p> <p>The work package and other documentation are developed by personnel that charge to this project and also by personnel that charge to project support service center (i.e., QAP and RWP).</p>		

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<b>WBS 04.11.06.01.03 Soils Remedial Action</b> <u>Remedial Investigation/Feasibility Study Work Plan</u> A draft D0 Remedial Investigation/Feasibility Study (RI/FS) Work Plan will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 RI/FS Work Plan will be submitted to the regulators for review and comment. A final D2 RI/FS Work Plan will be developed and submitted to the regulators for approval.  <u>Soils Remedial Investigation</u> Implement the approved D2 RI/FS Work Plan to characterize the SWMUs and prepare the RI Report.  The method(s) used for determining earned value for this WBS element is Percent Complete.  Before beginning fieldwork, the project team must have an internal field review (IFR). For this IFR, the project team will put together a work package. This work package includes the following: <ul style="list-style-type: none"><li>• Work instructions – includes hold points</li><li>• Training matrix and evidence of training</li><li>• UCD/USQD</li><li>• Lessons Learned</li><li>• Work authorization and work release from facility managers</li><li>• Procedures</li><li>• AHA</li><li>• Excavation/Penetration Permits</li><li>• RWP</li><li>• Team Meeting documentation</li><li>• Project Organizational Chart</li></ul> In addition to the above, a Sampling Analysis Plan (SAP), Quality Assurance Plan (QAP), Waste Management Plan (WMP), and Health and Safety Plan (H&S) may be needed for any non-CERCLA actions.  For CERCLA actions, the appropriate FFA/CERCLA documentation will be required which will include SAP, QAP, WMP, H&S Plan, and other documents, as applicable to the action. These documents may require regulatory approval.  The work package and other documentation are developed by personnel that charge to this project and also by personnel that charge to project support service center (i.e., QAP and RWP).		
<b>WBS 04.11.06.01.05 Soil/Rubble Piles</b>  <b>Soil and Rubble Area Sampling and Analysis</b>  <u>Sampling and Analysis Plans and Addenda</u>  Draft D0 SAPs and Addenda will be developed and submitted for internal review, then issued to DOE for review and approval. One SAP will be written for the soil piles and one SAP will be written for the rubble piles. Three Addenda for the soil piles will be written for Little Bayou Creek, Pile I (1-A), Remainder of LBC and NSDD (1-B), and Bayou Creek and an unnamed tributary (2). Comments from DOE will be incorporated and the final draft D1 SAPs and Addenda will be submitted to the regulators for review and comment. The final D2 SAPs and Addenda will be developed and submitted to the regulators for approval.		

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SAP and Addenda Implementation

The Sampling and Analysis Plans and Addenda will be implemented in the field. Activities will include sampling, laboratory analyses, data verification, validation, and assessment.

Site Evaluation Reports

Draft D0 Site Evaluation Reports will be developed for each Soil Pile SAP Addenda and the Rubble Pile SAP and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and the final draft D1 Site Evaluation Reports will be submitted to the regulators for review and comment. Final D2 Site Evaluation Reports will be developed and submitted to the regulators for approval.

**Soil and Rubble Area Removal Actions**

Non-Time Critical Removal Notification

A draft D0 Non-Time Critical Removal Notification for soil and rubble piles (including AOCs 492 and 541) will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 Removal Notification will be submitted to the regulators for review and comment. A final D2 Removal Notification will be developed and submitted to the regulators for approval.

Non-Time Critical Removal Action Engineering Evaluation/Cost Analyses (EE/CA)

A draft D0 Non-Time Critical Removal Action EE/CA for soil and rubble piles (including AOCs 492 and 541) will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 EE/CA will be submitted to the regulators for review and comment. A final D2 EE/CA will be developed and submitted to the regulators for approval.

Non-Time Critical Removal Action Memorandum (AM)

A draft D0 Non-Time Critical Removal AM for soil and rubble piles (including AOCs 492 and 541) will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 AM will be submitted to the regulators for review and comment. A final D2 AM will be developed and submitted to the regulators for approval.

Non-Time Critical Removal Action Completion Report

A draft D0 Non-Time Critical Removal Action Completion Report for soil and rubble piles (including AOCs 492 and 541) will be developed and submitted for internal review, then issued to DOE for review and approval. Comments from DOE will be incorporated and a final draft D1 Completion Report will be submitted to the regulators for review and comment. A final D2 Completion Report will be developed and submitted to the regulators for approval.

Soil/Rubble Pile Removal Actions

Execute the non-time critical soils removal action as defined in the Action Memorandum and RAWP. Completion of the removal actions will be documented within a Removal Action Completion Report.

The waste disposition scope includes the disposal of waste material generated as part of the removal actions. All waste material will be transported and disposed of at an appropriate receiving facility.

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- Team Meeting documentation
- Project Organizational Chart

In addition to the above, a Sampling Analysis Plan (SAP), Quality Assurance Plan (QAP), Waste Management Plan (WMP), and Health and Safety Plan (H&S) may be needed for any non-CERCLA actions.

For CERCLA actions, the appropriate FFA/CERCLA documentation will be required which will include SAP, QAP, WMP, H&S Plan, Site Evaluation Report and other documents, as applicable to the action. These documents may require regulatory approval.

The work package and other documentation are developed by personnel that charge to this project and also by personnel that charge to project support service center (i.e., QAP and RWP).

**DELIVERABLES**

**WBS 04.11.06.01.01 Soils Subproject Management**  
Element Milestones:

- None

  
Element Deliverables:

- Paducah PRS Quality Assurance (QA) Project Plan
- Paducah PRS ES&H Plan
- Provide input to the following reports and submittals (if applicable):
  - Monthly Project Performance Report
  - Risk Management Plan Updates
  - Site Management Plan (SMP)
  - SWMU Assessment Report
  - Semiannual Critical Analysis Report
  - Presentations
  - FFA briefings
  - Labor determinations
  - Gold Chart Performance Metrics
  - Annual updates to Site Treatment Plan
  - Annual Compliance Agreement Report
  - Annual ISMS Update
  - Annual Work Smart Standards Update
  - Financial Reporting, Management Analysis Reporting System
  - Annual Statement of Costs Incurred and Claimed
  - FFA Semiannual Progress Report
  - Remedial Action/Regulatory Commitment Tracking Report
  - Other reports/documents, as necessary

**WBS 04.11.06.01.02. Soils Removal Action**  
Element Milestones:

- Approval of the Removal Notification and EE/CA D2 versions
- Approval of the Action Memorandum D2 versions
- Approval of the RAWP D2 versions
- Approval of the Removal Action Completion Report D2 versions

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Element Deliverables:

- Removal notification and EE/CA, D1, and D2 versions
- Action Memorandum, D1, and D2 versions
- Removal Action Work Plan, D1, and D2 versions
- Removal Action Completion Report, D1, and D2 versions

**WBS 04.11.06.01.03. Soils Remedial Action**

Element Milestones:

- Approval of the RI/FS Work Plan D2 versions
- Completion of waste disposal

Element Deliverables

- RI/FS Work Plan, D1, and D2 versions

**WBS 04.11.06.01.05. Soil/Rubble Piles**

**Soil And Rubble Area SAPs and Addenda**

Element Milestones:

- Approval of the D2 Soil Pile Sampling and Analysis Plan
- Approval of the D2 Rubble Pile SAP
- Approval of Addendum 1-A
- Approval of Addendum 1-B
- Approval of Addendum 2
- Approval of the D2 Site Evaluation Reports (4)

Element Deliverables:

- Sampling and Analysis Plans (2) and Addenda (4)
- Site Evaluation Reports (4)

**Soil and Rubble Area Removal Actions**

Element Milestones:

- Approval of the Non-Time Critical Removal Notification
- Approval of the Non-Time Critical EE/CA
- Approval of the Non-Time Critical AM
- Approval of the Non-Time Critical RAWP
- Approval of Completion Report

Element Deliverables:

- Non-Time Critical Removal Notification
- Non-Time Critical EE/CA
- Non-Time Critical AM
- Non-Time Critical RAWP
- Non-Time Critical Removal Action Completion Report

**WBS 04.11.06.01.06 Site-wide Walk Over**

Element Milestones:

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- Approval of the Site-wide Walk-Over/Survey Plan
- Approval of the Site-wide Walk-Over/Survey Report
- Sampling and Analyses Plan
- Site Evaluation Report

Element Deliverables

- Site-wide Walk-Over/Survey Plan
- Site-wide Walk-Over/Survey Report
- Sampling and Analyses Plan
- Site Evaluation Report
- Authorized Limits 10 *CFR* 835 Posting exemption/waiver

**REQUIREMENTS**

- CERCLA/National Contingency Plan
- KY Hazardous Waste Permit (KY8-890-008-982)
- FFA for the PGDP
- SMP for the PGDP (annual revisions)
- Applicable state and federal laws and regulations (applicable or relevant and appropriate requirements)
- PRS ISMS
- UEO-1066, as updated - Lease Agreement between DOE and USEC, Revision 4, dated October 30, 2001
- Enclosure to GDP 95-0018, as updated - USEC and DOE Resolution of Shared Site Issues, Revision 1, dated March 30, 1998
- Applicable PRS plans, policies, and procedures
- WAC for all applicable treatment and disposal facilities that were in effect on April 24, 2006.
- Applicable DOE Orders
- Applicable Federal Acquisition Regulations

It is the core value of PRS that the safety and health of every worker, the public at large, and our environment are the most important assets that we are entrusted to protect. To accomplish this, an ISMS, based on DOE's ISMS, has been implemented that incorporates the five core functions and is based on the seven guiding principles. The objective of ISMS is to systematically integrate safety and environmental protection into the planning and execution of all work activities. The term safety encompasses Nuclear Safety, Industrial Safety, Industrial Hygiene, Occupational Health, Health Physics, and environmental issues. ISMS requirements flow down to PRS subcontractors. The five core functions are (1) define the scope of work, (2) analyze hazards, (3) develop and implement hazard controls, (4) perform work within controls, and (5) provide feedback and continuous improvement. The seven guiding principles are (1) line management responsibility for safety, (2) clear roles and responsibilities, (3) competence commensurate with responsibility, (4) balanced priorities, (5) identification of safety standards and requirements, (6) hazard control tailored to work being performed, and (7) operations authorization.

Before a subproject begins, several activities must be completed that demonstrate that all involved in the project have completed rigorous health and safety reviews and that all potential hazards of doing the work have been identified. The routine activities in remedial actions are conducted in accordance with standard operating procedures, activity hazard analyses, and Integrated Safety Management plans. Non-routine work will require a readiness assessment, as necessary, to ensure complete

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health, safety, and environmental reviews prior to work start. This assessment is conducted by people experienced in similar kinds of work with the right to examine all aspects of a project about to commence and requires that the project team provide documented evidence that any applicable requirements of the job have been met.

**SCOPE ASSUMPTIONS**

- A public meeting will be required as part of the CERCLA process.
- The SWMUs and areas of concern (AOCs) considered within the scope of this WBS element are as listed in this WBS Dictionary.
- Regulatory and reporting requirements remain static during the baseline performance period.
- PRS will provide employees with all site-required training necessary for access and to perform work on-site. Cost of training labor is included in the 70% productivity factor assigned for fieldwork. Course costs will be covered by PRS’s on-site training organization.
- Employees requiring entry into the Limited Area without escort will require the appropriate security clearances. Cost of required clearances will be covered by PRS.
- PRS will provide all required surveillance and maintenance support for facilities under a separate WBS element.
- Regulatory review periods will be in accordance with the FFA.
- No additional analytes will be required in the sample analysis other than those specified in the basis of estimate section.
- All D2 documents will be approved as submitted; therefore, development of a D2/R1 document will not be required.

Removal Actions:

- C-218 Firing Range: Estimated volume of soil to be remediated is 120,000 ft<sup>3</sup>.
- C-403 Neutralization Pit: Area of remediation will be confined to within 3 ft of soil offset of the concrete liner perimeter of the C-403 pit.
- Assumes all equipment used in the storage of C-403 Waste and removal can be decontaminated.
- Assumes all water removed from the C-403 Neutralization pit will be added to the TSCA Incinerator burn plan and final disposition will be at the TSCA Incinerator before the TSCA Incinerator closure date.
- C-410-B Sludge Lagoon: Area of remediation will be confined to within 3 ft of soil offset of the concrete liner perimeter and shall extend down to a depth of no more than 10 ft bgs.

Remedial Actions:

- DOE Material Storage Areas (DMSAs) and Scrap Yards will be empty of any aboveground waste or equipment prior to implementation of the remedial investigation. All other DOE-retained areas, except existing facilities, will be free of waste, equipment, and other aboveground obstructions.
- SWMUs/AOCs in common areas leased to USEC will be free of waste, equipment, and other aboveground obstructions.
- SWMU boundaries will not change.
- No additional SWMUs will be added to the SOU.
- SWMUs 92 and 97 are not included as part of the SOU Remedial Investigation because they were investigated as part of SWOU (On-Site).
- Only the portion of SWMU 194 not investigated previously for the DUF<sub>6</sub> Facility siting study is included as part of the SOU RI.
- All decontamination water will be discharged to Outfall 001 after sample results are evaluated by Environmental Compliance.

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<ul style="list-style-type: none"><li>Ditches on the north, south, and east sides of C-531-2 Switchyard were evaluated as part of SWOU (On-Site) assessment and are not included in the sitewide PCB evaluation.</li></ul>		
Soil and Rubble Areas Sampling and Removal Actions		
<ul style="list-style-type: none"><li>A public meeting for the non-time critical action will be required as part of the CERCLA process.</li><li>One Sampling and Analysis Plan will be written for all soil piles.</li><li>One Sampling and Analysis Plan will be written for all rubble piles</li><li>Three Addendum will be written for the Soil Piles SAP; Little Bayou Creek (Addendum 1-A), Remainder of LBC and NSDD (Addendum 1-B), and Bayou Creek and an unnamed tributary (Addendum 2).</li><li>Four Site Evaluation Reports will be written, one for Little Bayou Creek (Addendum 1-A), one for the Remainder of LBC and NSDD (Addendum 1-B), one for the Bayou Creek and an unnamed tributary (Addendum 2) and one for the Rubble Piles.</li><li>The SWMUs and areas of concern (AOCs) considered within the scope of this WBS element are as listed in this WBS Dictionary.</li><li>Assumes 10,000 cubic yards of soil to be removed for Little Bayou Creek, Bayou Creek, NSDD and un-named tributary soil pile areas (includes 256 cubic yards of soil to be removed from AOCs 492 and 541)</li><li>No more than 40% of the soil will be required to be disposed offsite (assumed to be disposed at the Energy Solutions facility in Utah)</li><li>None of the waste generated will require treatment prior to disposal.</li><li>100% of rubble removed will be disposed at the on-site landfill.</li><li>Assumes 200 yd<sup>3</sup> of debri to be removed for all rubble piles.</li><li>The facility (soil/rubble areas) will be considered radiological/industrial and not CAT 2 or 3 facilities.</li><li>Wetlands delineation will not require a COE wetlands permit or other impact.</li><li>Tree removal is required and will not be impacted by requirements related to the Indiana Bat or habitat associated.</li><li>The on-site Landfill will be available for disposal of PCB waste up to 49 ppm and will have the capacity for all soil and rubble area waste that is not required to go to an off-site facility.</li><li>As a result of characterization and removal efforts, there are no additional contaminants identified (PCBs and Uranium are identified) that would require removal.</li><li>Assumes all equipment used for the removal actions can be decontaminated.</li><li>Assumes DOE funding is available for this task.</li><li>Any piles or areas identified as contaminated as a result of the sitewide walkover will be addressed as part of a Non-Time Critical Removal Action in the outyears.</li><li>DOE will approve an authorized limits 10 CFR 835 posting exemption/waiver request within 30 days of receipt.</li><li>Rubble will not need to be size-reduced.</li></ul>		
Site-wide Survey		
<ul style="list-style-type: none"><li>Assumes 25% coverage of survey class 2 area, scan interval of 3m, therefore 25,000 square meters class 2 area surveyed</li><li>Assumes 10% coverage of survey class 3 area, scan interval of 9m, therefore 945,000 square meters class 1 area surveyed</li><li>Assumes a flyover will be performed</li><li>Assumes one Sampling and Analyses Plan and one Site Evaluation Report</li></ul>		

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<b><u>COMPLETION CRITERIA</u></b>		
<b>WBS 04.11.06.01.01 Soils Subproject Management</b> <ul style="list-style-type: none"><li>Completion of all technical and reporting requirements for the conduct and reporting of the Removal Action.</li></ul>		
<b>WBS 04.11.06.01.02 Soils Removal Action</b> <ul style="list-style-type: none"><li>EPA/KY approval of the Final Removal Action Completion Report</li><li>Deliver copies of all documents and files to Infrastructure contractor for archive.</li><li>Delivery of copies of all documents to the Infrastructure contractor for placement in the Environmental Information Center (EIC).</li><li>Delivery of copies all applicable documents to the Administrative Record.</li><li>Facilities C-218, C-403, C-410-B will be backfilled, revegetated, and erosion controls removed when appropriate.</li><li>Completion of the Removal Action requirements as defined by the RAWP.</li><li>Waste will be disposed of within one year of generation. All waste generated prior to 06/30/2009, will be disposed of prior to 09/30/2009.</li></ul>		
<b>WBS 04.11.06.01.03 Soils Remedial Action</b> <ul style="list-style-type: none"><li>EPA/KY approval of the Final RI/FS Work Plan.</li><li>Disposal of all waste generated by the remedial investigation.</li></ul>		
<b>WBS 04.11.06.01.05 Soil/Rubble Piles</b> <ul style="list-style-type: none"><li>EPA/KY approval of the Final Sampling and Analysis Plans and Addenda.</li><li>EPA/KY approval of the Site Evaluation Reports.</li><li>Disposal of all waste generated by the removal action.</li><li>Deliver copies of all documents and files to Infrastructure contractor for archive.</li><li>Delivery of copies of all documents to the Infrastructure contractor for placement in the EIC.</li><li>Delivery of copies all applicable documents to the Administrative Record.</li><li>Completion of the Removal Actions requirements as defined by the AM/RAWP.</li><li>Waste will be disposed of within one year of generation.</li></ul>		
<b>WBS 04.11.06.01.06 Site-wide Walk Over</b> <ul style="list-style-type: none"><li>DOE approval of the Site-wide Walk-Over/Survey Plan</li><li>DOE approval of the Site-wide Walk-Over/Survey Report</li><li>DOE approval of an authorized limits 10 CFR 835 posting exemption/waiver request</li><li>Sampling and Analyses Plan</li><li>Site Evaluation Report</li></ul>		
<b><u>RISK MANAGEMENT</u></b>		
See Risk Management Plan for analysis.		
Risk was mitigated through the following efforts: <ul style="list-style-type: none"><li>Continue to perform due diligence in all work activities to reduce the possibility of safety incidents.</li><li>Perform due diligence to ensure that waste is properly packaged and that transportation conveyances are properly loaded.</li><li>Follow waste characterization, packaging, transportation, and disposition procedures and plans.</li><li>Ensure that documents are written professionally and accurately.</li></ul>		

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- Ensure that fieldwork is carried out safely and in accordance with work instructions.
- DQOs will have qualitative and quantitative statements derived from the DQO Process that clarify study objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions and process knowledge.
- Subcontractor will follow ALARA principles and approved decontamination procedures.

#### **CERCLA AREAS AND SWMU**

<b>SWMU No.</b>	<b>Description</b>
1	C-747-C Oil Land Farm
11	C-400 TCE Leak Site
12	C-747-A UF <sub>4</sub> Drum Yard
13	C-746-P/Pi Clean Scrap Yard
14	C-746-E/E1 Contaminated Scrap Yard
15	C-746-C/C1 Scrap Yard
16	C-746-D Classified Scrap Yard
19	C-410-B HF Neutralization Lagoon
20	C-410-E Emergency Holding Pond
26	C-400 to C-404 Underground Transfer Line
27	C-722 Acid Neutralization Tank
31	C-720 Compressor Pit Water Storage Tank
32	C-728 Clean Waste Oil Tanks
40	C-403 Neutralization Tank
47	C-400 TCE Storage Tank Area
56	C-540-A PCB Staging Area
57	C-541-A PCB Waste Staging Area
74	C-340 PCB Transformer Spill Site
75	C-633 PCB Spill Site
76	C-632-B Sulfuric Acid Storage Tank
77	C-634-B Sulfuric Acid Storage Tank
78	C-420 PCB Spill Site
79	C-611 PCB Spill Site
80	C-540 PCB Spill Site
81	C-541 PCB Spill Site
92	Fill area for dirt from the C-420 PCB Spill Site
97	C-601 Diesel Spill
99	C-745 Kellogg Building Site
135	C-333 PCB Soil Contamination
137	C-746-A Inactive PCB Area
138	C-100 Southside Berm
153	C-331 PCB Soil Contamination (West)
154	C-331 PCB Soil Contamination (Southeast)
155	C-333 PCB Soil Contamination (West)
156	C-310 PCB Soil Contamination (West Side)
158	Chilled-Water System Leak Site

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160	C-745 Cylinder Yard Spoils (PCB Soils)		
163	C-304 Bldg./HVAC Piping System (Soil Backfill)		
165	C-616-L Pipeline & Vault Soil Contamination		
169	C-410-E HF Vent Surge Protection Tank		
170	C-729 Acetylene Bldg. Drain Pits		
172	C-726 Sandblasting Facility		
176	C-331 RCW Leak Northwest Side		
177	C-331 Leak East Side		
180	Outdoor Firing Range (WKWMA)		
181	Outdoor Firing Range (PGDP)		
194	McGraw Construction Facilities (South Side)		
195	Curlee Road Contaminated Soil Mounds		
196	C-746-A Septic System		
200	Soil Contamination South of TSCA Waste Storage Facility		
204	Dykes Road Historical Staging Area		
211	C-720 TCE Spill Site Northwest		
212	C-745-A Radiological Contamination Area		
213	DMSA OS-02		
214	DMSA OS-03		
215	DMSA OS-04		
216	DMSA OS-05		
217	DMSA OS-06		
218	DMSA OS-07		
219	DMSA OS-08		
220	DMSA OS-09		
221	DMSA OS-10		
222	DMSA OS-11		
223	DMSA OS-12		
224	DMSA OS-13		
225	DMSA OS-14		
226	DMSA OS-15		
227	DMSA OS-16		
228	DMSA OS-17		
229	DMSA OS-18		
481	C-410-A Hydrogen Cylinder		
483	Nitrogen Generating Facilities		
488	PCB Contamination Area by the C-410 Trailer Complex		
489	Septic Tank, North of C-710		
492	Contaminated Soil Area, North of Outfall 10		
493	Concrete Rubble Piles Near Outfall 001		
517	Rubble and Debris Erosion Control Fill Area		
518	Field South of C-746-P1 Clean Scrap Yard		
520	Scrap Material West of C-746-A		
531	Aluminum Slag Reacting Area		
541	Contaminated Soil Area, South of Outfall 011		
<b>BASIS OF ESTIMATE</b>			



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**1. Summary of Site Conditions**

- C-218 Firing Range, C-403 Neutralization Pit, and the C-410-B sludge Lagoon are known to be contaminated. Potential contaminants include metals, PCBs, radionuclides, semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs). Additional waste characterization sampling is required in all three facilities (C-218, C-403, and C-410-B) prior to commencing CERCLA document preparation. Interfaces with USEC will be required as follows:
  - USEC criticality accident alarm system (CAAS) coordination when applicable
  - USEC work activities
  - USEC utilities
  - Access to USEC areas
- No CERCLA documents have been prepared.
- Access to Limited Area is controlled by USEC; building/facility access will be controlled by USEC/PRS.
- Radiological conditions at the facilities will impact project work activities.
- All SWMUs are known to be contaminated. Potential contaminants include metals, VOC/SVOCs, PCBs, and radionuclides.
- Building/facility access will be controlled by PRS. In November of 2006, U.S. Department of Energy (DOE) identified a number of soil piles outside of the Paducah Gaseous Diffusion Plant (PGDP) industrialized area, with portions showing radioactivity levels greater than twice area background. Following this discovery, a phased approach was undertaken to catalogue and restrict access to the contaminated soil piles. The phased approach was developed to systematically identify soil piles, determine if access restrictions are required, post and install barriers where elevated (i.e., exceeds twice area background) radioactivity was identified, develop a path forward for the characterization of these areas, and plan for future actions. Phase I consisted of identification and posting of contaminated areas adjacent to outfalls or creeks and was completed on December 27, 2006. Phase II consists of the planning for and execution of characterization of the soil piles. Sampling and analysis is the first step toward completion of Phase II. Pending the conclusions of Phase II, Phase III consists of planning and execution of future actions (removal actions) to prevent exposure, if required.

**2. Estimating Methods**  
☐ Parametric      ☒ Bottom-Up      ☐ Other: \_\_\_\_\_

**3. Sources of Estimating**

- Equipment fuel, oil, gas and maintenance (FOGM) costs are based on Construction Industry Blue Book rates.
- Where government-furnished equipment (GFE) is not available, equipment rental costs are derived from Echols and R.S. Means or vendor quotes.
- Material and other direct cost (ODC) costs are based on vendor quotes, previous estimate for similar work, National Alliance contract, and equipment cut sheets from manufacturer's catalogs.
- Low value equipment (small hand tools, etc.) is priced as a multiplier based on personnel direct labor cost.
- The basis of estimate for the skill/professional workforce staffing is based on PRS's experience on similar projects.

**4. Basis of Estimate (Unescalated Values)**

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<b>WASTE VOLUMES</b>  See attached waste performance metrics, as applicable.  <b>PROJECT SCHEDULE</b>  See attached Milestone Status Summary Report.  <b>BASELINE BY YEAR</b>  See attached Baseline by Year Report.		